REMARKS

In the April 29, 2003 Office Action, claims **1**, **2**, and **4-21** are acknowledged as pending in the Application, wherein the Examiner has rejected claims **1**, **2**, and **4-21**. After entry of the instant Response, claims **1**, **2**, and **4-21** remain pending.

As a preliminary matter, the undersigned thanks the Examiner for the courtesy of the multiple telephone interviews conducted subsequent to the April 02, 2002 Action which originally and first addressed the Examiner's concerns. As stated during these interviews, the undersigned believes all claims as amended are allowable over the art of record. In accordance with the Examiner's original request, dated July 05, 2002, for Applicant to provide a separate record of the substance of these interviews, Applicants' have previously submitted the following:

> Claims **1-3** and **16** were discussed. Applicants pointed out for the Examiner's consideration that the Abrokwah '929 reference was malformed in the combinatorial syntheses corresponding to the §103(a) rejections in the pending Action. The Examiner agreed and conceded that the proper reference should have been Abrokwah '739. When Applicants' submitted a proposed amendment to further limit the *i*-GaAs thickness range from "approximately 3 nm to 12 nm" down to "at least 6 nm to approximately 12 nm", the Examiner provisionally suggested that amendment of the claimed GaAs range to recite "at least 7 nm to approximately 12 nm" would be allowable in view of the Abrokwah '739 disclosure of a preferred embodiment having a *i*-GaAs thickness of "less than approximately fifty angstroms" at col. 2, lines 20-24. When Applicants' asked what significance the thickness of 7 nm carried in the Examiner's consideration of provisional allowance, the Examiner was unable to identify where any clear cut-off might be made. However, when this issue was further probed by Applicants', the Examiner indicated that neither 6.25 nm, 6.50 nm nor 6.75 nm would be sufficient, but that the Examiner would allow the case if Applicants amended the range to "at least 7.0 nm". Applicants' communicated their belief that such an arbitrary determination, unsubstantiated with a reasonable basis for promoting an arbitrary cut-off at 7.0 nm, would not likely be favorably reviewed by the Appeals Board. At this point, the Examiner agreed that the Board would probably not uphold his decision, but that his decision would nevertheless remain in force at this point in prosecution. Applicants' attempted to submit further argument and evidence that the Abrokwah '739 reference only suggests operational GaAs thickness in the range of **"less than**

approximately [5 nm]" and that Applicants' proposed range would suggest thickness in the range of **at least greater than** 6 nm. Applicants' also proffered evidence by way of affidavit from Jonathan Abrokwah himself that he was not motivated to look beyond 5 nm because he didn't think that thicknesses above 5nm would work and the fact that it did work was certainly an unexpected result. The Examiner remained unpersuaded and indicated that continuation of the case would not likely advance prosecution.

Accordingly, Applicants filed a Notice of Appeal on or about September 25, 2002 followed by submission of an Appeal Brief on or about November 25, 2002. The Examiner subsequently reopened prosecution by issuing a non-final Office Action dated January 21, 2003. Applicants contend that the Examiner has reopened examination not in an attempt to advance prosecution toward allowable subject matter (given reasonable attempts by the Applicant to better clarify their invention by way of Applicants' Amendment filed in response to same), but rather to avoid entry of the preceding interview summary for consideration by the Board on Appeal. Consequently, since the Examiner's efforts have not demonstrated a *bona fide* goodfaith attempt by the Office to advance prosecution, Applicants respectfully request adjustment to the term of any patent that may issue from this case for each day beginning November 25, 2002 through the date of eventual presentation of Applicants' Appeal Brief to the Board for their esteemed consideration. Furthermore, Applicants respectfully request that the Examiner provide contact information for the Customer Service department of the United States Patent & Trademark Office in the Examiner's next paper so that Applicants, as a matter of procedural fairness, may be given the opportunity to request that the Office itself formally investigate the lack of diligence on the Examiner's part.

The preceding interview summary has been included herein so that the record of prosecution and the issues upon Appeal may be rendered clear in accordance with 37 C.F.R. §1.116.

CLAIM REJECTIONS UNDER 35 U.S.C. §103(a)

Claims **1**, **2**, **4**, **5**, **7-13**, **15**, **16** and **19-21** stand rejected under 35 U.S.C. §103(a) as purportedly unpatentable over U.S. Patent No. 5,895,929 to Abrokwah *et al.* in view of Kimura and Abrokwak *et al.* ('739). The Examiner suggests that Abrokwah ('929) discloses a HFET with a substrate 10 of GaAs, with AlGaAs intermediate layers, with layer 16 of GaAs, delta doped layer 22, InGaAs channel layer 23, AlGaAs layer 24 and GaAs cap layer 25. The Examiner further suggests that Abrokwah ('929) discloses a gate contact 30 having sidewalls 35 with the layer 25 partly removed. While the Examiner admits that Abrokwah ('929) does not show layer 22 as comprising GaAs, the Examiner suggests that it would have been obvious to form layer 22 with GaAs in order to demonstrate bandgap discontinuity. The Examiner further suggests that since layer 22 is delta doped, layer 22 would have some undoped material on either face. The Examiner also proposes that implantation in the Abrokwah ('929) disclosure is performed before layer 25 is removed. The Examiner further suggests that Kimura discloses a FET where an *i*-GaAs gate layer demonstrates width on the order of the gate contact. Finally, the Examiner proposes that it would have been obvious to apply the Kimura technique to the Abrokwah ('929) device "for the advantage shown".

As a preliminary matter, Applicants are without notice and/or understanding as to what "advantage" the Examiner is referring to. The Examiner makes reference to "the advantage shown (see abstract)", ostensibly in support of the synthetic combination of Abrokwah ('929) with the Kimura reference. Applicants are affirmatively unaware of which abstract the Examiner intends to reference. The abstract of Abrokwah ('929)? The abstract of Abrokwah ('739)? Kimura's abstract? Applicants' own abstract?

Applicants are wholly unable to identify or otherwise ascertain any "advantage" having been demonstrated or otherwise referenced in any of the abstracts or, for that matter, in any combination of the same. Applicants would remind the Examiner that the Office "cannot simply reach conclusions based on its own understanding or experience – or on its assessment of what would be basic

knowledge or common sense"; rather, the Examiner must point to some concrete evidence in the record in support the Office's findings of obviousness. *See, In Re Zurko*, 258 F.3d 1379 (2001) where the court found conclusions of obviousness lacking substantial evidentiary support to constitute reversible error on the part of the PTO.

TO THE EXTENT THAT THE "ABSTRACT" HAS BEEN VAGUELY REFERENCED SO AS TO LEAVE APPLICANTS WITH NO MEANS FOR ASCERTAINING WITH ANY CERTAINTY WHAT "ADVANTAGE" THE EXAMINER INTENDS TO IDENTIFY AS MOTIVATION FOR COMBINING THE CITED REFERENCES, APPLICANTS RESPECTFULLY REQUEST THAT THE EXAMINER WITHDRAW THE FINALITY OF THE PENDING ACTION SO THAT APPLICANTS' MAY BE GIVEN FAIR PROCEDURAL OPPORTUNITY TO FORMALLY RESPOND TO THE EXAMINER'S CONCERNS AS THEY RELATE TO THE PROPERLY IDENTIFIED REFERENCE.

Notwithstanding the preceding, Applicants herein respectfully traverse the rejections. In order to establish a *prima facie* case of obviousness under §103, three basic criteria must be met: (1) there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings; (2) there must be a reasonable expectation of success; and (3) the prior art reference (or references when combined) must teach or suggest **all of the claim limitations**. (*see* MPEP §2143; *emphasis added*).

With respect to the first requirement as it relates *inter alia* to the rejection of independent claims **1** and **16**, the pending Action fails to provide a reasoned basis for the suggestion or motivation to modify or combine the disclosure of Abrokwah ('929) with that of Kimura and/or any other teaching or reference of record. To the extent that such a suggestion or motivation has not been identified, under the second requirement, there can accordingly be no reasonable expectation of success.

Moreover, even if the Abrokwah disclosures were combined with that of Kimura and/or any other reference, knowledge or teaching of record, such a combination would not lead a person skilled in the art to develop Applicants' invention; namely, a method of manufacturing a semiconductor component with the described layer of undoped gallium arsenide having **"a thickness of at least six to approximately twelve nanometers"**. (*See* claim **1**; *emphasis added*). Accordingly, Abrokwah taken in combination with the disclosure of Kimura fails to teach each and every limitation of Applicants' invention. Applicants therefore submit that the §103(a) rejection of independent claims **1** and **16** as amended would be improper and respectfully request that the Examiner withdraw rejection of the same.

Notwithstanding the recitation of novel elements in each of claims **4-13**, **15** and **20**, inasmuch as these claims variously depend from and incorporate all of the limitations of their corresponding independent claims **1** and **16**, dependent claims **4-13**, **15** and **20** are similarly allowable over the art of record. Applicants therefore respectfully request that the Examiner withdraw §103(a) rejection of the same.

Notwithstanding the recitation of novel elements in claims **14** and **21**, inasmuch as these claims depend from and incorporate all of the limitations of independent claim **1** and dependent claim **20** (which depends from independent claim **16**), dependent claims **14** and **21** are similarly allowable over the art of record. Applicants therefore respectfully request the Examiner to withdraw §103(a) rejection of the same.

Notwithstanding the recitation of novel elements in claim **19**, inasmuch as this claim depends from and incorporates all of the limitations of independent claim **16**, dependent claim **19** is similarly allowable over Abrokwah ('929) in combination with Kimura in view of Abrokwah ('739). Applicants therefore submit that claim **19** is also in condition for allowance and respectfully request that the Examiner withdraw §103(a) rejection of the same.

Notwithstanding the recitation of novel elements in claims **17** and **18**, inasmuch as these claims depend from and incorporate all of the limitations of independent claim **16**, dependent claims **17** and **18** are similarly allowable over Abrokwah

('929) in view of Abrokwah ('285). Applicants therefore respectfully request the Examiner to withdraw §103(a) rejection of the same.

With respect to the rejection of claim **10** in view of "Abrokwah et al. ('939)", Applicants are affirmatively unaware of any '939 Abrokwah reference of record. Did the Examiner intend to recite "Abrokwah et al. ('929)"? Is "'939" a typographical error? Is there another "'939" reference that the Examiner intends to cite for Applicants' consideration?

TO THE EXTENT THAT THE REFERENCE TO "ABROKWAK '939" IS VAGUE (OR IN THE ALTERNATIVE, ERRONEOUS) AND LEAVES APPLICANTS WITH NO MEANS FOR ASCERTAINING WITH ANY CERTAINTY WHAT PUBLICATION THE EXAMINER INTENDS TO IDENTIFY FOR COMBINATION WITH THE REMAINING CITED REFERENCE(S), APPLICANTS RESPECTFULLY REQUEST THAT THE EXAMINER WITHDRAW THE FINALITY OF THE PENDING ACTION SO THAT APPLICANTS' MAY BE GIVEN FAIR PROCEDURAL OPPORTUNITY TO FORMALLY RESPOND TO THE EXAMINER'S CONCERNS AS THEY RELATE TO THE PROPERLY IDENTIFIED REFERENCE.

With respect to the rejection of claim **11** in view of "Abrokwah et al. ('939)", Applicants are affirmatively unaware of any '939 Abrokwah reference of record. Did the Examiner intend to recite "Abrokwah et al. ('929)"? Is "'939" a typographical error? Is there another "'939" reference that the Examiner intends to cite for Applicants' consideration?

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With respect to the rejection of claim 13 in view of "Abrokwah et al. ('939)", Applicants are affirmatively unaware of any '939 Abrokwah reference of record. Did the Examiner intend to recite "Abrokwah et al. ('929)"? Is "'939" a typographical error? Is there another "'939" reference that the Examiner intends to cite for Applicants' consideration?

TO THE EXTENT THAT THE REFERENCE TO "ABROKWAK '939" IS VAGUE (OR IN THE ALTERNATIVE, ERRONEOUS) AND LEAVES APPLICANTS WITH NO MEANS FOR ASCERTAINING WITH ANY CERTAINTY WHAT PUBLICATION THE EXAMINER INTENDS TO IDENTIFY FOR COMBINATION WITH THE REMAINING CITED REFERENCE(S), APPLICANTS RESPECTFULLY REQUEST THAT THE EXAMINER WITHDRAW THE FINALITY OF THE PENDING ACTION SO THAT APPLICANTS' MAY BE GIVEN FAIR PROCEDURAL OPPORTUNITY TO FORMALLY RESPOND TO THE EXAMINER'S CONCERNS AS THEY RELATE TO THE PROPERLY IDENTIFIED REFERENCE.

With respect to the rejection of claims 6 and 14 in view of "Abrokwah et al. ('939)", Applicants are affirmatively unaware of any '939 Abrokwah reference of record. Did the Examiner intend to recite "Abrokwah et al. ('929)"? Is "'939" a typographical error? Is there another "'939" reference that the Examiner intends to cite for Applicants' consideration?

TO THE EXTENT THAT THE REFERENCE TO "ABROKWAK '939" IS VAGUE (OR IN THE ALTERNATIVE, ERRONEOUS) AND LEAVES APPLICANTS WITH NO MEANS FOR ASCERTAINING WITH ANY CERTAINTY WHAT PUBLICATION THE EXAMINER INTENDS TO IDENTIFY FOR COMBINATION WITH THE REMAINING CITED REFERENCE(S), APPLICANTS RESPECTFULLY REQUEST THAT THE EXAMINER WITHDRAW THE FINALITY OF THE PENDING ACTION SO THAT APPLICANTS' MAY BE GIVEN FAIR PROCEDURAL OPPORTUNITY TO FORMALLY RESPOND TO THE EXAMINER'S CONCERNS AS THEY RELATE TO THE PROPERLY IDENTIFIED REFERENCE.

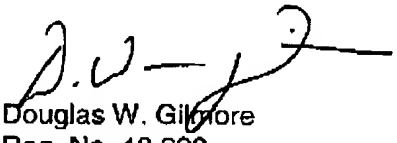
CONCLUSION

The cited references have been reviewed and are not believed to affect the patentability of claims **1, 2 and 4-21**. Accordingly, reconsideration and allowance of all pending claims is earnestly requested in order to advance prosecution in the case.

No amendment made herein was related to the statutory requirements of patentability unless expressly stated; rather any amendment not so identified may be considered as directed *inter alia* to clarification of the structure and/or function of the invention and Applicants' best mode for practicing the same. Additionally, no amendment made herein was presented for the purpose of narrowing the scope of any claim, unless Applicants have argued that such amendment was made to distinguish over a particular reference or combination of references. Furthermore, no election to pursue a particular line of argument was made herein at the expense of precluding or otherwise impeding Applicants from raising alternative lines of argument later during prosecution and/or Appeal. Applicants' failure to affirmatively raise specific arguments is not intended to be construed as an admission to any particular point raised by the Examiner.

Should the Examiner have any questions regarding this Response or feel that a telephone call to the undersigned would be helpful to advance prosecution, the Examiner is invited to call the undersigned at the number given below.

Respectfully submitted,



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